

## NOTES ON AUSTRALIAN CRUSTACEA.

No. II.<sup>(1)</sup>

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*(Contribution from the South Australian Museum.)*

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PLATES I. AND II.

## Family GNATHIIDAE.

Two species of these remarkable Isopods have been hitherto noted from Australian waters, but no member of the suborder has been previously recorded from the southern coast.

The characteristic pseudo-mandibles of the male are doubtless utilized to grasp the female during copulation. In describing a sponge-dwelling species from South Africa, Barnard writes: "The male was found either sitting in the mouth of the burrow with the mandibles just projecting or clasping the female."<sup>(2)</sup>

In each of the species listed below, the male is known from only one specimen. Undoubtedly a great number of small forms of Crustacea inhabiting the waters of South Australia remain to be collected.

## GNATHIA, Leach.

*Gnathia*, Leach, Edinb. Encycl., vii., 1814, p. 402; Barnard, Ann. South Afr. Mus., x., 1914, p. 201, and xvii., 1920, p. 332 (syn.).

*Ancaeus*, Hesse, Comptes rendus, 1855, and Ann. Sci. Nat. (4), ix., p. 93.

*Ancaeus*, Hesse, Ann. Sci. Nat. (5), xix., 1874, p. 8.

## KEY TO MALES OF AUSTRALIAN SPECIES.

- a. Medial length of head three-fourths, or more than three-fourths, the greatest width. Third and fourth thoracic segments separated by a marked constriction.
- b. Dorsum of head almost covered with small, rounded, uniform tubercles; not areolate; not deeply excavate anteriorly. Fifth and sixth thoracic segments medianly divided dorsally. Length, 2.5 mm. . . . . *latidens*
- bb. Dorsum of head with large and small tubercles on anterior third only; remainder with large and distinct areoles; deeply and broadly excavate anteriorly. Fifth and sixth thoracic segments not split. Length, 4.1 mm. . . . . *mulieraria*
- aa. Medial length of head less than three-fourths the greatest width. Third and fourth thoracic segments not separated by a constriction.
- c. Anterior margin of head deeply incised, with a median tooth which does not reach to the level of the antero-lateral angles of head. Eyes small. Mandibles large, longer than head. Fifth and sixth thoracic segments not split dorsally . . . . . *ferox*
- cc. Anterior margin of head produced, the middle reaching beyond level of antero-lateral angles of head. Eyes moderately large. Mandibles small, about one-half length of head. Fifth and sixth thoracic segments medianly divided dorsally . . . . . *pustulosa*

The characters given for *G. ferox* are taken from Haswell's description and figure.

(1) No. I. appeared in Rec. S. Austr. Mus., 1924.

(2) Barnard, Ann. South Afr. Mus., xvii., 1920, p. 334.

## GNATHIA FEROX, Haswell.

*Ancus ferox*, Hasw., Proc. Linn. Soc. N.S. Wales, ix., 1885, p. 1005, pl. lii, figs. 1-5.

*Hab.*—New South Wales: Port Jackson.

## GNATHIA LATIDENS, Beddard.

*Ancus latidens*, Beddard, Proc. Zool. Soc., 1886, p. 120, and Rep. Sci. Res. "Challenger" (Zool.), xvii., 1886, p. 141, pl. xviii., fig. 11.

*Hab.*—Northern Australia, Flinders Passage, 7 fms.

**Gnathia mulieraria**, n. sp.

Pl. i., figs. 1-8; pl. ii., figs. 1-3.

♂. *Head* large, subquadrate in outline, the medial length more than three-fourths the width; dorsum anteriorly forwardly inclined and broadly excavated, the depression deepest and widest in front; at base of head is a small furrow on each side of the median line; at the bottom of the large excavation is a large, elongate-oval tubercle, almost one-third the length of the head and arising near the anterior margin of the head; on each side of the central tubercle is a large, obtusely-conical tubercle, behind which, and nearer the eye, is another similar but smaller projection; to the rear of the latter is an oblique row of three tiny tubercles; posterior three-fourths of dorsal surface with eight large areoles; on the interspace alongside the outermost of these is a longitudinal row of tiny spinules; anterior margin of head sinuate, prominently tridentately produced between mandibles; antero-lateral angles crowned with a forwardly-directed, unevenly-quadrate tubercle, which overhangs the base of the antennae. Eyes small, their longitudinal diameter one-fourth the length of the head. Antennae long, the first pair extending to the second-third of the fourth joint of the second pair. First joint of superior antennal peduncle longer than second joint; third much longer, two and one-half times as long as second; flagellum five-jointed, second and third joints longest, subequal in length. Third joint of peduncle of inferior antennae as long as first and second together; fourth nearly half as long again as third; flagellum seven-jointed. Mandibles large and prominent, a little shorter than head, scoop-shaped on inner surface; intero-inferior edge crenulate and superior edge incrassate, notched at the first fourth of the length; distal portion bent upwards and inwards.

*Thorax.*—Second to sixth segments with more or less distinct small areoles. First short, almost as wide as head, strongly constricted on each side; closely coalesced with head, the suture rather indistinct. Second medianly as long as first, the antero-lateral portions curved forwards, but not quite reaching head; lateral edges twice as long as medial length; posterior margin slightly sinuate. Third as long as first and second together. Fourth separated from third by a marked constriction; nearly one-third longer than third; tumid on each side, the swellings almost meeting medianly. Fifth slightly longer medianly than fourth; lateral margins longer owing to concave posterior margin; slightly swollen towards sides. Sixth twice as long as third, the lateral portions swollen, produced backwards postero-laterally; sides sinuate. Segments one, two, three, and five are subequal in width; segments four and six are narrower; segment seven small and inconspicuous, little more than one-third the width of the sixth and not as wide as the abdomen.

*Abdomen* moderately large, more than one-fourth of the total length exclusive of the mandibles. Epimera prominent. Sixth (telsonic) segment as long as wide, the margins sinuate; posterior portion with a strong hair on each side; apex subacute with two setae. Uropoda elongate, subtruncate

apically; inner branch (not counting marginal setae) extending to level of termination of abdomen, as long as, but wider than outer branch; terminal setae as long as uropods and their peduncle together.

*Peraeopods*.—First pair operculiform, two-jointed; basal joint large with three distinct areoles; fringe of hairs on inner edge rather stout, spaced; second joint one-fifth as long as first, subcircular, with several setae at apex. Second to sixth pairs moderately strong, armed with a few spines and some long hairs.

*Pleopods* short, with long apical setae; about one-fifth as long as abdomen.

*Colour* (during life).—Antennae, legs, mandibles, and tubercles of head white. Areoles of dorsum of head and thorax yellow; interspaces pale brown, closely dotted with brown chromatophores, which become larger and more diffused on the posterior two-thirds of thorax. First to fifth abdominal segments pale yellow, with a few chromatophores at sides; telsonic segment, uropods and pleopods subhyaline.

*Length* (excluding mandibles), 4.1 mm.; width of head, 1.1 mm.; greatest width of thorax, 1.05 mm.; length of abdomen, 1.05 mm.

*PRANIZA LARVA*.—*Head* small, subtriangular, with the mouth parts projecting. Eyes large, occupying nearly the whole of the lateral margin. First antennae as long as peduncle of second pair. Flagellum of superior antennae four-jointed, the second joint much the longest. Fourth joint of peduncle of inferior pair twice as long as third joint; flagellum seven-jointed.

*Thorax*.—First segment short, narrow, inconspicuous. Second wider than head, a little curved forwards. Third longer and wider than second. Fourth, fifth, and sixth more or less swollen, the posterior sutures of fourth and fifth indiscernible. Seventh small, narrower than abdomen.

*Abdomen*.—Much as in adult male.

*Peraeopods*.—The six pairs of subprehensile legs are relatively much more slender than in the male.

*Colour*.—Head pale testaceous, with a few crowded black spots. Thorax milk-white, with a few scattered, hieroglyphic-like black chromatophores. First to fifth segments of abdomen white with sparse black chromatophores; telsonic segment, uropods and pleopods subhyaline.

*Length*, 3.1 mm. to 3.7 mm.; greatest width of thorax, .91 mm. to 1.35 mm.

*Hab.*—South Australia: Gulf St. Vincent, 7-8 fms. (H. M. Hale). Type, South Australian Museum (Reg. No., C. 198).

A single male, and several *Praniza* larvae, presumably belonging to the same species, were taken from amongst masses of *Zostera* brought up in the dredge, during a recent excursion of the Field Naturalists' Section of the Royal Society.

The large mandibles, distinctive tubercles, and large excavation of the fore part of the dorsum of the head, are salient characters for this species.

### ***Gnathia pustulosa*, n. sp.**

Pl. ii., figs. 4-7.

♂. *Head* large, transverse, about one and two-thirds times as wide as medianly long; almost wholly covered with small granules and not divided into areoles; anterior margin a little produced forwards and medianly slightly bilobed; antero-lateral margins incassate; a longitudinal, mesial furrow on dorsum for about three-fourths of the length, deepest anteriorly, and a shallow fovea on each side of posterior portion of head; hinder margin concave. Eyes

small, their longitudinal diameter about four and one-half times in the width of the head. Superior antennae short and stout; second joint of peduncle a little shorter than first, the third one and two-thirds times as long as second; flagellum five-jointed, the first joint short and the second about as long as the third and fourth together. Inferior antennae damaged; fourth peduncular joint equal in length to second and third together. Mandibles moderately large, not very conspicuous when folded; scoop-shaped on inner surface; less than half as long as the head; superior margin notched towards middle of length.

*Thorax*.—None of the segments is separated by a constriction. First segment small and narrow, half the width of the head, with the suture distinct; surface granulate. Second distinctly wider than head, expanded on sides, the lateral edges being about twice as long as the medial length; greater part of surface granulate; posterior margin convexly sinuate, medianly a little incised; antero-lateral margins in contact with head. Third wider than any other segment; expanded on sides, the lateral edges more than twice the medial length, which is scarcely greater than that of the first segment; posterior margin concavely sinuate, medianly incised, with edges of incision incrassate; granulate on part of surface. Fourth a little longer medianly than first three together, laterally considerably shorter; anteriorly with a median, submarginal tooth, which fits beneath the incrassate incision of the preceding segment; posterior margin almost straight. Fifth split medianly, each of the halves with a nick at the middle of the length of the inner edge; posterior margin straight. Sixth split medianly; narrowed posteriorly and with lateral portions slightly swollen. Seventh one-fourth as wide as sixth, subrectangular, narrower than abdomen.

*Abdomen* small, curved beneath the body.

*Peraeopods*.—First pair operculiform, with the basal joint large, without apparent areolation and with a fringe of short, fine hairs on inner edge; second joint rudimentary. Second to sixth pairs stout, armed with a few blunt spines, tubercles, and hairs.

*Pleopods* one-half as long as the abdomen, without setae.

*Colour* (in spirit).—Dirty yellow with granulae and mandibles white. Eyes black.

*Length* (excluding mandibles), 3.15 mm.; width of head, 1.01 mm.; greatest width of thorax, 1.18 mm.

♀ (distended with ova). *Head* rounded in front, very slightly concave medianly. Eyes about half as long as head.

*Peraeopods* much more slender than in male.

*Thorax*.—All of the sutures are discernible, those of the swollen portion (fourth to sixth) rather indistinct. Ova subreniform.

*Colour*.—White with eggs yellow.

*Length*, 3.2 mm.; greatest width of thorax, 1.55 mm. Ova: length, .29 mm. to .35 mm.; width, .19 mm. to .24 mm.

*Hab.*—South Australia: Glenelg (W. H. Baker). Type, South Australian Museum (Reg. No., C. 199).

A single pair, somewhat mutilated. Some years ago Mr. Baker found these clinging to a sponge washed up near the mouth of the Patawalonga Creek after heavy weather. In both sexes the abdomen is small and curved beneath the thorax; owing to the poor condition of the specimens it is not possible to accurately figure the telson, etc.

Besides the characters given in the introductory key, this species differs from the other three Australian species as follows:—The anterior margin of

the head is not tridentate, as in *G. latidens* and *G. mulieraria*, or excavated, as in *G. ferox*. As in *G. latidens*, the head is almost uniformly tuberculate dorsally, and the fifth and sixth thoracic segments are medianly split; the granules, however, are smaller, the third and fourth thoracic segments are not separated by a constriction, and the mandibles are much smaller than in that species. The dorsum of the head has a median anterior furrow and two posterior foveae, whereas *G. latidens* has only a posterior median groove.

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EXPLANATION OF PLATES I. AND II.

PLATE I.

- Fig. 1. *Gnathia mulieraria*, male; enlarged 25 diams.  
 „ 2-4. Dorso-interior, ventral and lateral views of right pseudo-mandible; enlarged 50 diams.  
 „ 5. Superior and inferior antennae; enlarged 125 diams.  
 „ 6. First peraeopod; enlarged 50 diams.  
 „ 7. Second peraeopod; enlarged 50 diams.  
 „ 8. Terminal segments of abdomen and uropods; enlarged 100 diams.

PLATE II.

- Fig. 1. Präniza larva of *Gnathia mulieraria*; enlarged 28.5 diams.  
 „ 2. Superior and inferior antennae; enlarged 143 diams.  
 „ 3. Tip of maxilla; enlarged 336 diams.  
 „ 4. *Gnathia pustulosa*, male; enlarged 28.5 diams.  
 „ 5. Dorso-interior view of left mandible; enlarged 143 diams.  
 „ 6. Superior antenna; enlarged 143 diams.  
 „ 7. First peraeopod; enlarged 57 diams.
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